

Message

From: Kay, Robert [rtkay@usgs.gov]
Sent: 2/21/2019 7:10:18 PM
To: Nordine, John [nordine.john@epa.gov]
Subject: Re: [EXTERNAL] RE: EW-2 Capture Zone Work Plan

Works for me.

On Thu, Feb 21, 2019 at 11:32 AM Nordine, John <nordine.john@epa.gov> wrote:

How about a call today 2Pm?

John

From: Kay, Robert <rtkay@usgs.gov>
Sent: Thursday, February 21, 2019 11:05 AM
To: Nordine, John <nordine.john@epa.gov>
Subject: EW-2 Capture Zone Work Plan

John--here is my review of the "Work Plan to Evaluate Extraction Well No. 2 Capture Zone" prepared by Autumwood Consultants for the Techalloy/Central Wire site in Union, Illinois. This document is dated February 2019.

I have a few comments:

To say this work plan is short on detail is an understatement. I recommend the following:

1. Pressure transducers with no more than a 0-15 psi range (ideally 0-10) be placed in each piezometer and water levels should be logged every 10-15 minutes.
2. Transducer measurements must be recorded as elevation relative to a common datum--ideally sea level/NGVD83 but an internal datum would be OK--or at least recorded so they can be easily converted to elevation relative to the datum. It is critical that ALL water levels during the 15-minute monitoring period be collected so that we know the the water-level elevation in each piezometer relative to the water-level elevation in the other piezometers at any given time.

3. The piezometers will need to be surveyed so we know the elevation of each measuring point relative to some common datum. We don't need a professional surveyor for this, but we need to be sure we know the elevation of the measuring point for each well to about 0.01 ft.
 4. Water levels need to be checked periodically by e-tape or steel tape measurements. At an absolute minimum this should be done at the start and end of the monitoring period. More frequent checking should be done.
- Manual water levels not only need to be taken, they need to be checked against the transducer readings to ensure the transducer readings are accurate to 0.01 ft. If they are not, the transducers need to be replaced.
5. Ideally each of the piezometers should be sampled for VOCs at some point. This is not critical, but would be helpful to the assessment of the plume capture.
 6. How deep are the piezometers to be? What will be the length of the well screens? Ideally they should duplicate the screen elevation on EW-2, but at a minimum should be placed at an elevation in the middle of the EW-2 screen and should have a minimum length of 10 ft.

How are the piezometers to be constructed? just shoved in? or with sand pack and bentonite and grout? Ideally we want full construction, but I can probably live with "shove it in the ground" if it is done right.

7. The piezometers should be developed prior to the start of monitoring.
8. We need some means of knowing precisely when EW-1 and EW-2 (separately) are pumping and not pumping--ideally to the minute. We also need some means of knowing precisely how much each well is pumping at any given time. How does Autumwood intent to get this information?
9. Although we need to monitor water levels during routine operations, we also need to do controlled testing for part of the monitoring period.

a. Shut off EW-1 and EW-2 for a couple days prior to piezometer installation. Once the piezometers are installed and developed, take a water level in each well and identify the "natural" water level elevations in this area.

b. Perform a multiple-well constant discharge aquifer test here by beginning to pump EW-2 and monitoring water levels in the piezometers on a log time cycle--something like every 6 seconds for the 1st minute, every 12 seconds for the 2nd minute, every 30 seconds for minutes 2-10; every minute for minutes 11-20, every 5 minutes or so thereafter). Autumwood should know the precise pumping rate for EW-2. EW-1 should remain unpumped. The test should proceed for at least 100 minutes, ideally 1,000 minutes.. Ideally collect water levels every 15 minutes from one of the nearby monitoring wells (DGW-2S/I?) to get background trends.

Shut off EW-2 after 1,000/100 minutes and monitor recovery of water levels.

Analyze the time-drawdown and distance-drawdown data to determine the transmissivity and storage coefficient of the aquifer. This data can be used to accurately assess capture--in combination with the "natural" and routine pumping water level data.

c. Proceed with the 15-minute monitoring and standard pumping of EW-1 and EW-2.

10. Ideally we could begin monitoring ASAP and continue monitoring until late May. This would allow for a more complete assessment of capture over the course of the year--lower water and higher water cycles.

11. Ideally the piezometers should remain in place for future monitoring. However, if they need to be removed when the monitoring is done, I have no objection..

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